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09/779,092	02/08/2001	William C. Hardy	RIC-00-031	1671

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EXAMINER	
TAYLOR, BARRY W	
ART UNIT	**PAPER NUMBER**
2643	16

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Advisory Action	Application No.	Applicant(s)
	09/779,092	HARDY, WILLIAM C.
	Examiner	**Art Unit**
	Barry W Taylor	2643

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 16 June 2003 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

a) ☒ The period for reply expires *3* months from the mailing date of the final rejection.

b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1.☐ A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.

2.☐ The proposed amendment(s) will not be entered because:

(a) ☐ they raise new issues that would require further consideration and/or search (see NOTE below);

(b) ☐ they raise the issue of new matter (see Note below);

(c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

(d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____.

3.☐ Applicant's reply has overcome the following rejection(s): _____.

4.☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

5.☒ The a)☐ affidavit, b)☐ exhibit, or c)☒ request for reconsideration has been considered but does NOT place the application in condition for allowance because: *See Continuation Sheet*.

6.☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

7.☒ For purposes of Appeal, the proposed amendment(s) a)☐ will not be entered or b)☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: _____.

Claim(s) objected to: _____.

Claim(s) rejected: *1-61*.

Claim(s) withdrawn from consideration: _____.

8.☐ The proposed drawing correction filed on _____ is a)☐ approved or b)☐ disapproved by the Examiner.

9.☐ Note the attached Information Disclosure Statement(s)(PTO-1449) Paper No(s). _____.

10.☒ Other: *PTO-892*

Continuation Sheet (PTO-303)

Response to Arguments

1. Applicant's arguments filed 6/16/03 have been fully considered but they are not persuasive.

a) Applicant's continue to argue (see page 2 of paper number 15, dated 6/16/03, After final) that neither Hollier, Malvar, Di Pietro, nor Chen suggest or disclose a processor operative calculate a solution to at least one empirically derived mathematical function by using at least one measured characteristic as an independent variable, etc.

Applicants continue to argue on page 2 stating that the Examiner fails to explain why the Bark scale is relevant to the language recited in claim 1. One of minimum skill in the art of audio would readily recognize the importance of "Bark scale" (i.e. critical band rate) used for classifying signals. The Examiner has provided Applicant's with prior art that uses "Bark scale" for characterizing an input signal. Please see Examiners Office Action made Final (paper number 14 dated 4/3/03) wherein Examiner has provided Applicant's with clear explanation. For example, U.S. patent 5,715,372 (Meyers et al) teaches voice coders that automatically calculate mean opinion score directly from voice signals, without human evaluators. However, Meyers, similar to Hollier fails to show at least one measured characteristic as an independent variable (please see Examiners Office Action made Final on 4/3/03, paper number 14 and PCT/US02/03820, section V.2 Citations and Explanations).

Applicant's further contend that Malvar simply has no relevance to the task of calculating a solution to at least one empirically derived mathematical function by using the at least one measured characteristic as an independent variable (see bottom of page 2).

The Examiner respectfully disagrees. Malvar teaches a system and method for real time parametric modeling for a probability distribution function that approximates the users perception of the quality of a voice connection (abstract, columns 1-4, col. 5 lines 30-67, columns 7-12, col. 13 line 43 – col. 16 line 66, col. 18 line 50+). Malvar discloses using a modified probability distribution model wherein the shape is controlled by a single parameter, which is directly related to the peak value of the coefficients (columns 19-22) thus minimizing computational overhead for model selections. **Furthermore, Malvar defines a "BARK SCALE" see column 13 lines 43+. Column 15 reveals scalar quantization wherein the final weighting function determines the spectral shape of the quantization noise that would be minimally perceived, as per the model discussed above. Column 16 even reveals a unique representation having probabilities. Column 18 and figure 16 reveals probability modeling. More importantly, columns 19-20 reveals that parametric modeling uses a model for a probability distribution function (PDF) of the quantized and run-length encoded transform coefficients. Please see column 19 lines 17+ wherein** "Usually, codecs that use entropy coding (typically Huffman codes) derive PDFs (and their corresponding quantization tables) from histograms obtained from a collection of audio samples. In

contrast, the present invention utilizes a modified Laplacian+exponential probability density fitted to every incoming block, which allows for better encoding performance. **One advantage of the PDF model of the present invention is that its shape is controlled by a single parameter**, which is directly related to the peak value of the quantized coefficients. **That leads to no computational overhead for model selection, and virtually no overhead to specify the model to the decoder**".

Please see column 19 lines 17+ wherein "Specifically, the probability distribution model of the present invention preferably utilizes a modified Laplacian+exponential probability density function (PDF) to fit the histogram of quantized transform coefficients for every incoming block. **The PDF model is controlled by the parameter A described** in box 1510 of FIG. 15 above (it is noted that A is approximated by vr, as shown by box 1512 of FIG. 15). Thus, the PDF model is defined by: ##EQU10##".

b) Regarding Applicant's remark on page 3 with regards to Malvar does not employ a probability distribution function that approximates the user perception of the quality of a voice connection.

The Examiner disagrees. Malvar uses "Bark scale" as well as conventional mathematical devices (see columns 13-14) used for classifying audio signals. In fact,

Malvar even discloses the "critical bands" used for classifying audio signals see "Bark subbands" that may be used (column 14 line 12+).

c) Regarding Applicant's brief remark at the bottom of page 3 wherein Applicant's continue to argue that Examiner has failed to explain the importance of "Bark scale".

Please see sections a-b listed above. Furthermore, the Examiner has provided Applicant's with two articles that deal with speech and audio processing and explain "Bark scale" used among audio engineers (see references cited listed below).

d) Regarding Applicant's remark on page 4 wherein Applicant's continue to argue that Chen uses Gaussian distributions. Applicant's assertion is irrelevant because Applicant's fail to define or argue Applicant's invention, nor do Applicant's exclude and/or include the "Gaussian distribution" in Applicant's independent claim. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., Gaussian distribution) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In summation, Chen also teaches a method and apparatus for detecting zero rate frames in a communications system wherein a quality metric is computed and compared against a threshold value. The threshold value is selected based, in part, on the quality metrics received frames and can be selected based on the quality metrics computed for

decoded frames (Title, abstract). Chen figure 5 also shows plotting two probability density functions (i.e. PDFs) wherein the threshold 514 can be set at a value Xth such that a desired outcome is achieved.

e) Regarding Applicant's general statement on page 4 regarding dependent claim 2 where Applicant's argue that neither Hollier, Malvar, Di Pietro, nor Chen teach using PDFs. The Examiner respectfully disagrees (see Examiner's previous Rejections, paper number 10 dated 10/18/02 and paper number 14 dated 4/3/03 as well as sections a-d listed above).

Regarding Applicant's remarks for sections f.-j.) wherein Applicant's continue to argue that the Examiner provides no independent analysis for each of the independent claims.

f) Regarding claim 18. The Examiner further notes that method claim 18 is rejected for the same reason as apparatus claim 1 since the recited apparatus would perform the claimed steps.

g) Regarding claim 29. Program claim 29 is nothing more than the combination of Apparatus claims 1 and 14 as well as method claim 18. Therefore, program claim 29 is rejected for the same reasons as apparatus claims 1 and 14 and corresponding method claim 18 since one of minimum skill in the art would expect some sort of program to operate the apparatus.

h) Regarding claim 37. Independent claim 37 is nothing more than the combination of previous rejected claims 1, 18 and 29 and therefore is rejected for the same reasons as claims 1, 18 and 29.

i) Regarding claim 49. One of minimum skill in the art would expect some sort of program to operate the apparatus as well as some sort of computer readable medium for storing such program.

j) Regarding claim 61. The Examiner respectfully disagrees because one of minimum skill in the art would expect some sort of program to operate the apparatus.

k) Regarding Applicant's brief remarks starting on page 13 (i.e. "B.") and continuing to page 15 wherein Applicant's argue that there is no suggestion or motivation to modify the references or to combine reference teachings. Applicants contend that the Examiner fails to point out where the above motivational statement can be found.

The Examiner respectfully disagrees. Hollier does not explicitly show the at least one measured characteristic as an independent variable.

Malvar teaches a system and method for real time parametric modeling for a probability distribution function that approximates the users perception of the quality of a voice connection (abstract, columns 1-4, col. 5 lines 30-67, columns 7-12, col. 13 line 43 – col. 16 line 66, col. 18 line 50+). Malvar discloses using a modified probability distribution model wherein the shape is controlled by a single parameter, which is

directly related to the peak value of the coefficients (columns 19-22) thus minimizing computational overhead for model selections. **Furthermore, Malvar defines a "BARK SCALE" see column 13 lines 43+. Column 15 reveals scalar quantization wherein the final weighting function determines the spectral shape of the quantization noise that would be minimally perceived, as per the model discussed above. Column 16 even reveals a unique representation having probabilities. Column 18 and figure 16 reveals probability modeling. More importantly, columns 19-20 reveals that parametric modeling uses a model for a probability distribution function (PDF) of the quantized and run-length encoded transform coefficients. Please see column 19 lines 17+ wherein** "Usually, codecs that use entropy coding (typically Huffman codes) derive PDFs (and their corresponding quantization tables) from histograms obtained from a collection of audio samples. In contrast, the present invention utilizes a modified Laplacian+exponential probability density fitted to every incoming block, which allows for better encoding performance. **One advantage of the PDF model of the present invention is that its shape is controlled by a single parameter**, which is directly related to the peak value of the quantized coefficients. **That leads to no computational overhead for model selection, and virtually no overhead to specify the model to the decoder**". **Please see column 19 lines 17+ wherein** "Specifically, the probability distribution model of the present

invention preferably utilizes a modified Laplacian+exponential probability density function (PDF) to fit the histogram of quantized transform coefficients for every incoming block. **The PDF model is controlled by the parameter A described** in box 1510 of FIG. 15 above (it is noted that A is approximated by vr, as shown by box 1512 of FIG. 15). Thus, the PDF model is defined by: ##EQU10##".

Di Pietro teaches a method and apparatus for automatically and reproducibly rating the transmission quality of a speech transmission system wherein differences between characteristic values are feed to a neural network which classifies the quality of the difference signals as Good, Medium and Bad, and a defuzzyfication logic circuit further refines the quality classification output (Title, abstract). Di Pietro figure 5 shows that the tree outputs are scaled into a range of 0 to 1 and the final classification is determined by calculating the center of the area covered by the Good, Medium and Bad signal. Di Pietro also discloses that the so-called Bark scale may be used to define a twodimensional spectrogram. **Furthermore**, Di Pietro also discloses using the so-called "Bark Scale" **and defining a twodimensional array** wherein the Bark scale is based on the physiology of the human ear and **it is therefore an appropriate basis for defining characteristic values** (see bottom of column 8 continuing to column 9).

Chen also teaches a method and apparatus for detecting zero rate frames in a communications system wherein a quality metric is computed and compared against a threshold value. The threshold value is selected based, in part, on the quality metrics

received frames and can be selected based on the quality metrics computed for decoded frames (Title, abstract). **Chen figure 5 also shows plotting two probability density functions (i.e. PDFs) wherein the threshold 514 can be set at a value Xth such that a desired outcome is achieved**.

It would have been obvious for any one of ordinary skill in the art at the time the invention was made to modify the codec as taught by Hollier to utilizes a probability density function that classify signals as taught by Malvar or Di Pietro or Chen so that the codec may classify a signal or set a value such that a desired outcome is achieved.

Furthermore, the Examiner even provided Applicant's with addition reference that read on Applicant's general claim language (see referenced cited by Examiner listed: ***Meyers et al (5,715,372) is considered pertinent for method and apparatus for characterizing an input signal via PDF***). The Examiner also notes that Di Pietro even cited the Meyers patent therefore the motivation would be self evident to one of ordinary skill in the art versed in the Meyers patent, to provide a measurement technique which is independent of various voice coding algorithms and consistent for any given algorithm (see Meyers column 2 lines 44-47). To one of ordinary skill in the art having two references would not have been discouraged from modifying the CODEC of Hollier with an old well known measurement technique as evidenced by Meyers cited by Di Pietro.

2. Regarding Applicant's general statement starting at the bottom of page 5 and continuing to page 6 wherein Applicant's contend that the Examiner failed to point out the relevance of U.S. Patent No. 5,715,372 to Meyers et al.

The Examiner respectfully disagrees. The Examiner has provided Applicant's with prior art that uses "Bark scale" for characterizing an input signal. Please see Examiners Office Action made Final (paper number 14 dated 4/3/03) wherein Examiner has provided Applicant's with clear explanation. For example, U.S. patent 5,715,372 (Meyers et al) teaches voice coders that automatically calculate mean opinion score directly from voice signals, without human evaluators. However, Meyers, similar to Hollier fails to show at least one measured characteristic as an independent variable (please see Examiners Office Action made Final on 4/3/03, paper number 14 and PCT/US02/03820, section V.2 Citations and Explanations). The Examiner reminds Applicant's that PCT/US02/03820 is a continuation of the pending application (i.e. 09/779,092). The Examiner notes that the Examiner's detailed explanation (i.e. PCT form 408) was mailed on 11/25/02 and that there was no response received from Applicant's and PCT form 409 / 416 was mailed on 4/01/03.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

---("Bark Scale Equalizer Design Using Warped Filter") Peng et al discloses that "Bark scale" is also called critical band rate in literature among audio engineers used as a good measurement of auditory systems wherein a coefficient vector is derived (please see pages 3317 to 3320). Peng et al also provide "empirical observations" (see top left of page 3319). Peng et al even discloses that the proposed scheme can be applied in

practical audio system designs, especially where the implementation cost is a crucial consideration and the energy of the target signal concentrates at relatively low frequencies. In other words, Peng et al provide equalization scheme to construct an equalizer that can provide different equalization effect at different frequencies according to the frequency resolving ability of human auditory system (please see conclusions section on page 3320).

---("Bark and ERB Bilinear Transforms") Smith, III et al disclose use of a bilinear conformal map to achieve a frequency warping nearly identical to that of the Bark frequency scale wherein the map is that of the transfer function (please see pages 697 to 708).

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